Amendments to the Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

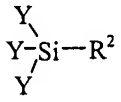
Claim 1. (currently amended): A method for forming a diffusion barrier layer between a copper metal layer and a silicon substrate comprising the steps of:

a) preparing the silicon substrate;

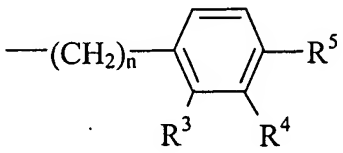
b) contacting the silicon substrate with a composition comprising self- assembled monolayer subunits and a solvent;

c) removing the solvent thereby forming the diffusion barrier; and

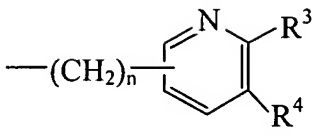
d) forming a copper metal layer on the diffusion barrier as formed in step (c) using a vapor deposition process, said diffusion barrier inhibiting copper diffusion into the substrate[[.]], wherein the self-assembled monolayer subunit is of the following structure:



wherein Y is an O-alkyl group, and wherein R^2 is a group selected from

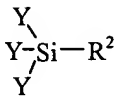


and



wherein R^3, R^4 and R^5 are independently selected from the group consisting of hydrogen, alkyl groups, heteroalkyl groups, halo groups, NH_2, NHR^6, NR^6R^7, OH, OR^6, SH, SR^6, CHO, COOH and CN, and wherein R^6 and R^7 are alkyl groups, and wherein n is an integer ranging from 1 to 5.

Claim 2. (Currently amended): The method of claim 1 wherein the self assembled monolayer subunit is of the following structure:



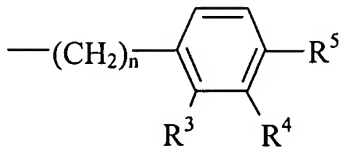
wherein Y is an O-alkyl group, and wherein R2 is an alkyl group~~, heteroalkyl group~~, linked to an aryl group or heteroaryl group.

Claim 3. (canceled).

Claim 4. (original): The method according to claim 1, wherein the silicon substrate preparation comprises the formation of a silicon oxide surface.

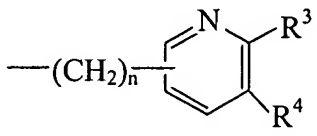
Claim 5. (original): The method according to claim 1, wherein the method further comprises the step of heating the silicon substrate and the composition during contact.

Claim 6. (original): The method according to claim 2, wherein R^2 is an alkyl group of the following structure:



wherein R^3, R^4 and R^5 are independently selected from the group consisting of hydrogen, alkyl groups, heteroalkyl groups, halo groups, NH_2, NHR^6, NR^6R^7, OH, OR^6, SH, SR^6, CHO, COOH and CN, and wherein R^6 and R^7 are alkyl groups, and wherein n is an integer ranging from 1 to 5.

Claim 7. (currently amended): The method according to claim 2, wherein R^2 is an ~~alkyl~~ heteroaryl group of the following structure:



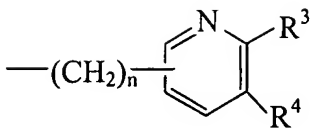
wherein R^3 and R^4 are ~~independently selected from the group consisting of~~ hydrogen, ~~alkyl groups, heteroalkyl groups, halo groups, NH_2, NHR^6, NR^6R^7, OH, OR^6, SH, SR^6, CHO, COOH and CN, and wherein R^6 and R^7 are alkyl groups,~~ and wherein n is an integer ranging from 1 to 5.

Claim 8. (previously presented): The method according to claim 2, wherein Y is OCH_3.

Claim 9. (original): The method according to claim 6, wherein Y is OCH_3.

Claim 10. (original): The method according to claim 7, wherein R^3, R^4 and R^5 are hydrogen and n is 2.

Claim 11. (original): The method according to claim 8, wherein R^2 is an alkyl group of the following structure:



and wherein R^3 and R^4 are hydrogen and n is 2.

Claims 12-23 (canceled).

Claim 24. (currently amended): A method of forming a device, the method comprising:

(a) providing a substrate;

(b) providing a diffusion barrier layer, wherein the diffusion barrier layer comprises a self-assembled monolayer, wherein the self-assembled monolayer is a single layer of molecules, and wherein the molecules in the self-assembled monolayer have first ends attached to the substrate and second ends, comprising aromatic groups, projecting upward from the substrate; and

(c) forming a copper metal layer on the diffusion barrier layer as formed in step (b) using a vapor deposition process, wherein the copper in the metal layer is in direct contact with the second ends of the molecules in the self-assembled monolayer, and the diffusion barrier prevents diffusion of copper atoms into the substrate.

Claim 25. (previously presented): The method of claim 24 wherein the device is capable of being biased at about 2 MV/cm at about 200°C for about 30 minutes without diffusion of the copper into the substrate.

Claim 26. (previously presented): The method of claim 24 wherein the substrate comprises silicon oxide on silicon.

Claim 27. (canceled).

Claim 28. (previously presented): The method of claim 24 wherein the vapor deposition process is a sputtering process.